

# Digital Ignition ZDG3

Instruction manual digital ignition for HONDA CB350-750



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# Fitting instructions for digital ignition ZDG3 for Honda CB350-750

## 1. Description - 2. Fitting - 3. Electrical connection - 4. Adjustment - 5. General

The digital ignition ZDG3 consists of three components

- **Light-barrier printed circuit board**
- **and corresponding mechanical components**
- **The ignition box**
- **possibly double ignition coil (not included)**

and replaces the contact breaker sets and the mechanical advance unit.

Function: per revolution of the crankshaft starting from TDC, the momentary peripheral speed is determined and by this means, the time up to ignition is calculated. Because the peripheral speed varies substantially during acceleration, this long measurement is selected in order to determine a relatively exact measurement. The following computation of ignition timing is divided into 4 ranges

1.	0-400 rpm	Starting range, ignition always at TDC
2.	400-1000 rpm	Idling range, 2 - or 7° advanced ignition, depending upon curve selection
3.	1000-6200 rpm	Partial load range, the spark advance adjustment occurs here.
4.	6200-10000 rpm	Maximum load range, constant 32° or 34° advanced ignition, depending on curve selection.



ignition box



pick-up PCB (printed circuit board) and disk

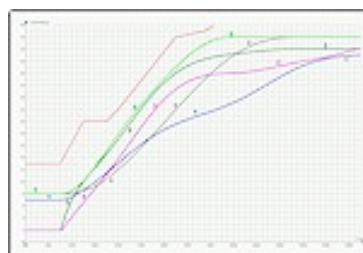
Why measure by means of a light-barrier? Because as opposed to magnetic pickups which merely give impulses which vary according to RPM therefore demanding a more complicated computation, light-barriers give a static output signal.

Unlike other ignition systems, here each pair of cylinders has a self-sufficient ignition, i.e. two micro-controllers for two pairs of cylinders, thus two light-barriers. This has the advantage that the advanced ignition is precisely computed for each pair of cylinders.

Thus, this ignition can also be used with one-cylinder models, by leaving one channel unconnected.

**If the engine stops, the ignition current will be switched off after 3 sec. to protect the ignition coils.**

Five ignition curves are available:



ignition curves



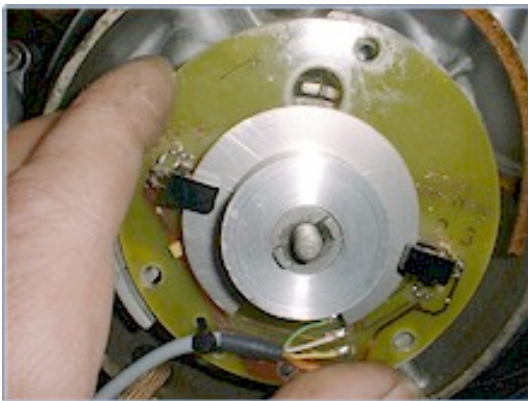
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First remove contact plate and centrifugal governors. Remove springs and cam ring from the governor and push it again onto the crankshaft axle.



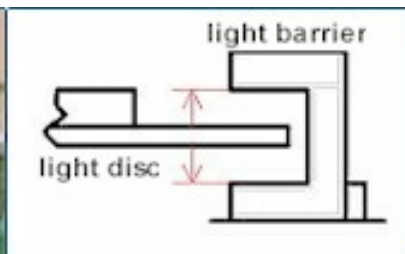
Next push the disk and the printed circuit board **carefully together** onto the governor-axle.



(An individual assembly is not possible, because the disk cannot be inserted later.)

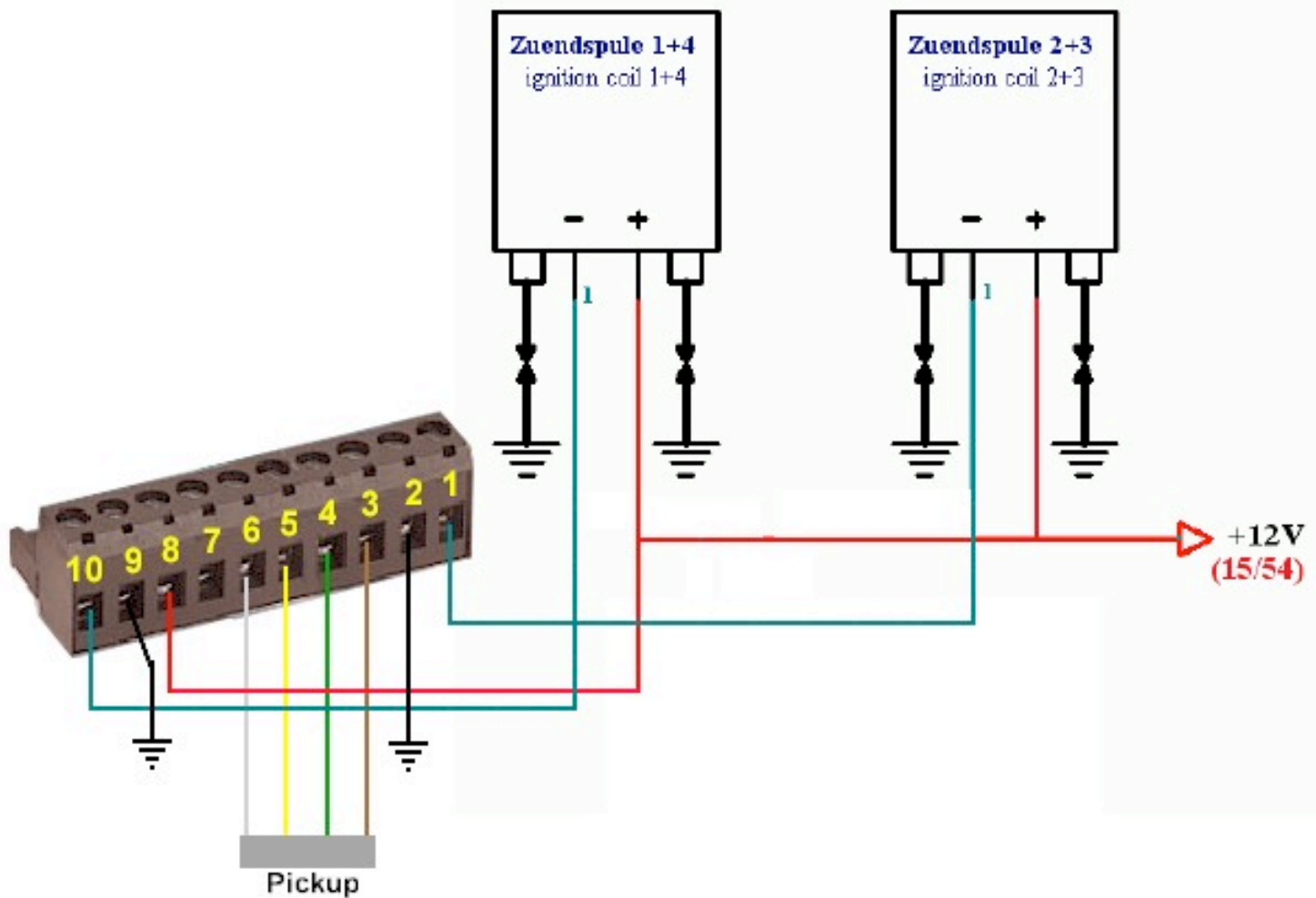


Finally, fit the pickup PCB (printed circuit board) by three M5 screws. Ensure that the light disc is midway between the light-barrier. At last tighten the central hexagonal element with the M6-nut. The set-screws in the lens for later adjustment do not tighten yet.



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Ignition circuit diagram

## Connection allocation of the system plug

1	ignition coil cylinder 2+3
2	ground (ensure good contact to the frame!)
3	ground (Pickup)
4	green, 'right' light barrier P2 (cyl. 2+3) (Pickup)
5	yellow, 'left' light barrier P1 (cyl. 1+4)(Pickup)
6	white, +5V (Pickup)
7	tachometer output (for electronic rev counter)
8	+12V (12V supply voltage from the ignition switch, e.g. ignition coil 15 or +)
9	ground
10	ignition coil cylinder 1+4

The conductor cross-section of the ground wire should amount to 1,5-2,5 mm<sup>2</sup> and should be kept as short as possible.

The conductor cross-section of the other cables should not be below 0,75 mm<sup>2</sup>.

**Always use end splices!**



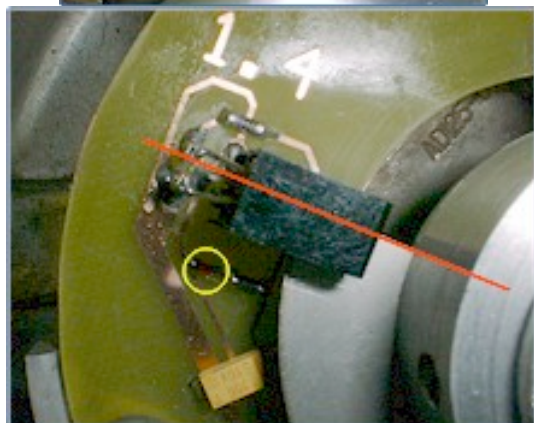
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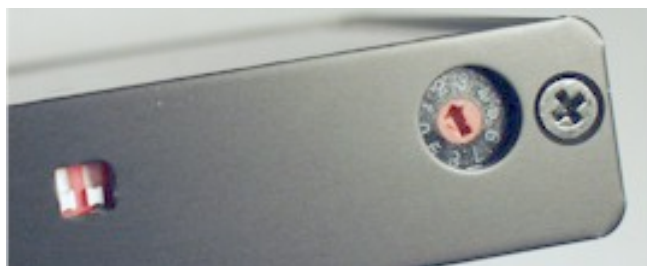
**Attention! Remove the sparking plug cap before adjusting the light disc!**



First bring the outside pistons in TDC (TI F1-marking on the governor). Now rotate the light disk precisely into position as shown in the picture. The position is correct when the LED (yellow circle) toggles. Now tighten the grub screws evenly and replace the spark plug caps. The bike is ready to start. Finally, check the ignition timing with a strobe and if necessary, correct the position of the light disk. Keep the strobe not direct on the hole, but so far above that the marking can be seen still good. Otherwise the light barriers are influenced by lightning of the strobe.



The switches can be found at the front of the ignition box:



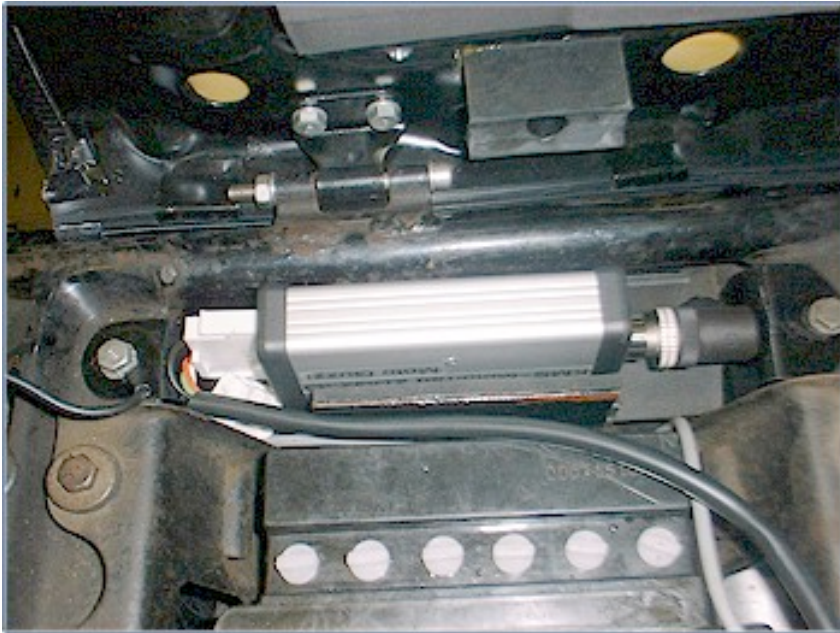
## switch adjustment

rotary switch (curve selection)		dip switch	
<b>1-5</b>	<b>curves 1-5</b>	<b>1</b>	<b>overspeed protection at 7900 rpm</b> (switch down) <b>or at 9800 rpm</b> (switch up)
<b>6-7</b>	<b>curves 1-2, double ignition</b> (only BMW, Guzzi)	<b>2</b>	<b>rev. counter frequency</b> (switch up >> fout =crankshaft switch down >> fout=camshaft )
<b>8-10</b>	<b>no function, test mode</b>		

## Anbauanleitung digitale Zündung ZDG3 (Honda CB350-750)

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In case of the engine not starting, backfiring or stalling, the ignition coils are mixed up. If so reconnect the ignition coils.



The ignition box (here still the 2nd-Version) can be fitted e.g. in the tool box under the seat.

### Only use interference-free spark plugs!

(recommended NGK caps with 5kOhm internal resistance)

At some stroboscope lamps the ignition point suddenly oscillates around 4-6°. In this case the lamp once reacts to the ignition spark starting, another time to the burning end of the spark. If possible readjust the sensitivity of the lamp.

Another possibility is to put an 0,1uF/400V-capacitor provisionally during the adjustment over the connections of the respective ignition coil.

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